LISTING OF THE CLAIMS:

Claims 1-20 (Cancelled).

21.   (Currently Amended) A method ~~for~~ of managing a cluster of networked resources using rule-based constraints in a scalable clustering environment, the method comprising the steps of:

building a globally optimal configurations of ~~one or more clusters of networked~~ said cluster of resources, ~~for~~

bringing ~~them~~ said cluster of resources on-line in a systematic manner, given a set of resources, resource groups, ~~their~~ current states of said resources and resource groups, dependencies, preferences, constraints, events, and policies, ~~including concurrently discovered resources and resource groups, availability and unavailability of the resources and resource groups for being able to go on-line,~~

determining ~~their~~ dynamic dependencies of and configuration information ~~such as load-serving capacity and quality of service, cluster policies and changes thereof, as applied to the network of resources and resource groups~~ about said cluster of resources, including determining said dependencies and configuration information (i) at cluster initialization and (ii) dynamically during cluster operation, ~~for~~

supporting a seamless startup and shutdown of <u>said cluster of</u> resources and resource clusters according to the current policies, multiple demands on the cluster resources, current status of the cluster resources, <u>and</u> system events, and their effects on the priority of the services provided by the cluster,

separating the said dependencies, constraints, events, and policies into <u>(i)</u> a static or an occasionally changing rules and objectives group and <u>(ii)</u> a dynamically changing cluster events and policies group, and

separating the networked resources, resource groups, <u>and</u> cluster configurations into static <u>a first,</u> <u>static group,</u> and <u>a second,</u> dynamically changing groups <u>group,</u> and

taking a snapshot of the said <u>first and second</u> groups only when needed to build the said optimal cluster configurations <u>configuration.</u>

22. (Currently Amended) A method according to Claim 21, comprising the further steps of:

continuously monitoring cluster-wide events and comparing the current cluster state with a desired state, and whenever there is a discrepancy between said current and desired states, realigning the cluster resources, including the step of issuing commands to the cluster resources to bring about the realigning;

providing a group of cluster services, including:

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i)   a persistent cluster registry to store and retrieve the configuration of the cluster
      resources,

ii)   topology services for detecting node and communication adapter failures,

iii) ~~reliable~~ messaging for selected communications between a central resource and
      all other resources, and

iv)   a group services facility for electing one of the resources as the central resource at
      cluster initialization and whenever an existing central resource is unable to
      provide the services thereof,

delivering events to a coordinator, said coordinator combining said events with said rules and objectives to arrive at a response to said events;

translating the response into commands to the resources, each of the commands containing all the state needed for execution of the command by a manager of one of the resources, including the step of issuing the commands in a partial order given by said dependencies; and

not sending out a new command until the ~~leader~~ <u>central</u> resource is aware of a positive outcome of the commands that the execution of said new command depends on.

23.   (Previously Presented) A method according to Claim 22, wherein:

said coordinator ensures that globally-optimal solutions get deployed in the cluster in response to events in the cluster; and

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all events and command feedback are directed to said coordinator.

24.   (Previously Presented) A method according to Claim 21, comprising the further steps of:

providing an optimizer module for computing a globally optimal solution based on said constraints and to current state of the cluster;

using the optimizer for recomputing the globally optimal solution whenever an objective value of a deployed solution is below a certain value as compared to a proposed solution, including the step of feeding back to the optimizer an artificially generated event that forces the optimizer to recompute the global solution;

providing the optimizer with a snapshot of the current state of the cluster;

wherein the step of using the optimizer for recomputing the globally optimal solution includes the step of said optimizer, given said snapshot, proposing an approximately optimal cluster configuration that takes into account said current state of the cluster and long-term objectives defined for the cluster.

25.   (Currently Amended) ~~Apparatus for~~ <u>A system for managing a cluster of networked resources using rule-based constraints in a scalable clustering environment, comprising apparatus for:</u>

building a globally optimal configurations of ~~one or more clusters of networked~~ said cluster of resources, ~~for~~

bringing ~~them~~ said cluster of resources on-line in a systematic manner, given a set of resources, resource groups, ~~their~~ current states of said resources and resource groups, dependencies, preferences, constraints, events, and policies, ~~including concurrently discovered resources and resource groups, availability and unavailability of the resources and resource groups for being able to go on-line;~~

determining ~~their~~ dynamic dependencies of ~~and~~ configuration information ~~such as load-serving capacity and quality of service, cluster policies and changes thereof, as applied to the network of resources and resource groups~~ about said cluster of resources, including determining said dependencies and configuration information (i) at cluster initialization and (ii) dynamically during cluster operation, ~~for~~

supporting a ~~seamless~~ startup and shutdown of said cluster of resources ~~and resource clusters~~ according to ~~the~~ current policies, ~~multiple demands on the cluster resources, current status of the cluster resources,~~ and system events, ~~and their effects on the priority of the services provided by the cluster,~~

separating the said dependencies, constraints, events, and policies into (i) a ~~static or an occasionally changing~~ rules and objectives group and (ii) a dynamically changing cluster events and policies group, and

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separating the networked resources, resource groups, ~~and~~ cluster configurations into ~~static~~ a first, static group and a second dynamically changing ~~groups~~ group, and

taking a snapshot of the said first and second groups only when needed to build the said optimal ~~cluster configurations~~ configuration.

26.   (Currently Amended) A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps ~~for~~ of managing a cluster of networked resources using rule-based constraints in a scalable clustering environment, said method steps comprising:

building a globally optimal configurations of ~~one or more clusters of networked~~ said cluster of resources, ~~for~~

bringing ~~them~~ said cluster of resources on-line in a systematic manner, given a set of resources, resource groups, ~~their~~ current states of said resources and resource groups, dependencies, preferences, constraints, events, and policies, ~~including concurrently discovered resources and resource groups, availability and unavailability of the resources and resource groups for being able to go on-line, said method steps comprising~~

determining ~~their~~ dynamic dependencies <u>of</u> ~~and~~ configuration information ~~such as load serving capacity and quality of service, cluster policies and changes thereof, as applied to the network of resources and resource groups,~~ <u>about said cluster of resources, including determining said dependencies and configuration information (i)</u> at cluster initialization and <u>(ii)</u> dynamically during cluster operation, ~~for~~

supporting ~~a seamless~~ startup and shutdown of <u>said cluster of</u> resources ~~and resource clusters~~ according to ~~the~~ current policies, ~~multiple demands on the cluster resources, current status of the cluster resources,~~ <u>and</u> system events, ~~and their effects on the priority of the services provided by the cluster,~~

separating the said dependencies, constraints, events, and policies into <u>(i)</u> a ~~static or an occasionally changing~~ rules and objectives group and <u>(ii)</u> a dynamically changing cluster events and policies group, and

separating the networked resources, resource groups, <u>and</u> cluster configurations into ~~static~~ <u>a first, static group,</u> and <u>a second</u> dynamically changing ~~groups~~ <u>group,</u> and

taking a snapshot of the said <u>first and second</u> groups only when needed to build the said optimal ~~cluster configurations~~ <u>configuration.</u>

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